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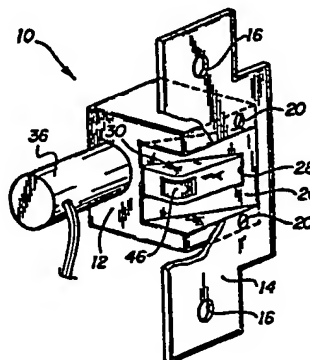
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(54) **Concealed door release mechanism.**

(57) A door release mechanism (10) for a door (24) having a latch bolt (22) is provided. The door release mechanism (10) includes a strike block (12) adapted to receive the latch bolt (22). A ramped surface (26) is provided within the strike block (12) for urging the latch bolt (22) into the door (24) to thereby open the door (24). Structure (30, 42, 48) is further provided within strike block (12) for preventing the latch bolt (22) from being withdrawn within the door (24) for maintaining the door (24) closed.



**FIG. 1**

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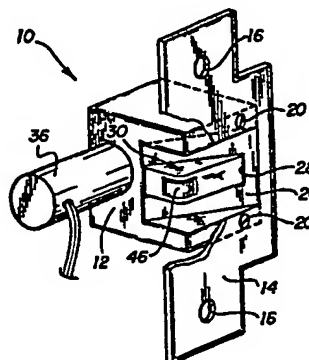
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**FIG. 1**

## BACKGROUND ART

In security devices it is desirable to automatically release locks having latch bolts or guarded latch bolts. Such bolts are carried by a door and are received in a strike which is closed by a jamb. Previously developed automatically released devices have required modification of the lip of the jamb in which the release mechanism was mounted. In addition, such prior devices were vulnerable to attack at the point where the release mechanism was exposed outside the door jamb.

A need has thus arisen for a release mechanism that is completely concealed within the door jamb. A need has further arisen for a release mechanism that will release the latch bolt as the door is pushed to the open position.

## DISCLOSURE OF THE INVENTION

In accordance with the present invention, a door release mechanism is provided which is concealed within a door jamb.

5 In accordance with the present invention, a door release mechanism for a door having a latch bolt is provided. A strike block is adapted to receive the latch bolt. Structure is provided within the strike block for urging the latch bolt into the door to  
10 thereby open the door. Structure is further provided within the strike block for preventing the latch bolt from being urged into the door to thereby maintain the door closed.

15 In accordance with another aspect of the present invention, a door release mechanism for a door having a latch bolt is provided. A strike block is adapted to receive the latch bolt and includes a ramped surface over which the latch bolt travels. The ramp surface urges the latch bolt into the door to thereby  
20 open the door. A pivoting keeper is disposed within the strike block for selectively allowing the latch bolt to travel over the ramped surface to the door open position. Structure is provided for controlling the pivoting keeper for controlling the position of  
25 the pivoting keeper with respect to the ramped surface of the strike block.

**BRIEF DESCRIPTION OF THE DRAWINGS**

For a more complete understanding of the present invention and for further advantages thereof, reference is now made to the following Detailed Description taken in conjunction with the accompanying Drawings in which:

5

FIGURE 1 is a perspective view of the present door release mechanism;

10

FIGURE 2 is a side elevational view of the door release mechanism shown in FIGURE 1 in the closed and locked position; and

FIGURE 3 is a side elevational view of the door release mechanism shown in FIGURE 1 in the open and unlocked position.

## DETAILED DESCRIPTION

Referring simultaneously to FIGURES 1 and 2, the present door release mechanism is illustrated and is generally identified by the numeral 10. Door release mechanism 10 is mounted within a strike block 12 which is covered by a strike plate 14. Strike plate 14 includes apertures 16 for mounting strike plate 14 and strike block 12 to a door jamb (not shown). Strike block 12 is mounted to strike plate 14 utilizing screws 20.

Strike block 12 receives a latch bolt 22 carried by a door 24 when door 24 is in the closed position. Latch bolt 22 is retracted within door 24 as door 24 is opened. Latch bolt 22 is spring loaded and is extended into strike block 12 when door 24 is closed.

Disposed within strike block 12 is a ramped surface 26 over which latch bolt 22 travels. Also included within strike block 12 and disposed within a slot 28 within ramped surface 26 is a keeper mechanism 30. Keeper mechanism 30 is pivotable about pin 32 within strike block 12. As illustrated in FIGURE 2, keeper mechanism 30 is in the closed position such that latch bolt 22 is positioned below keeper mechanism 30 at the bottom end of ramped surface 26.

Interconnected to strike block 12 is a solenoid 36 which when actuated causes keeper mechanism 30 to be retracted within strike block 12 as latch bolt 22 moves across ramped surface 26 from the bottom end of ramped surface 26 to the top end thereof. Such movement thereby enables door 24 to open. In the open position of door 24, keeper mechanism 30

automatically returns to the position illustrated in FIGURE 2.

Referring more specifically to FIGURE 2, associated with pin 32 is a return spring 40 which maintains keeper mechanism 30 in the position as illustrated in FIGURE 2. Interconnected to keeper mechanism 30 is a channel-like dogging member 42 which is pivotally interconnected to keeper mechanism 30 via a pin 44. Also mounted on pin 44 is a roller 46. Pivotally interconnected to dogging member 42 is a lever member 48 via a pin 50. When solenoid 36 is energized, members 42 and 48 pivot to allow keeper mechanism 30 to pivot in a clockwise direction about pin 32. As latch bolt 22 moves up ramped surface 26, it is simultaneously forced into door 24 thus releasing door 24 near the end of travel of latch bolt 22. A short continuation of ramped surface 26 is provided by a bevel 56 on the opening in strike plate 14. A slight bevel 22a may be provided on latch bolt 22 to provide a smoother operation of latch bolt 22 as it travels over ramped surface 26.

Referring simultaneously to FIGURES 2 and 3, FIGURE 2 illustrates keeper mechanism 30 in the closed position while FIGURE 3 illustrates keeper mechanism 30 in the open position. In the open position of keeper mechanism 30, keeper mechanism 30 is biased to its full counterclockwise position around pin 32 with members 42 and 48 horizontally disposed. Return spring 40 biases keeper mechanism 30 to the closed position as illustrated in FIGURE 2.

A bias spring 60 also extends around pin 32 and engages dogging member 42. Bias spring 60 maintains

dogging member 42 in its fully counterclockwise position about pin 44. A torsion spring 62 is mounted around pin 50 to hold lever member 48 in its fully clockwise position about pin 50. Torsion spring 62 may be held within a groove in lever member 48. Springs 40, 60 and 62, bias keeper mechanism 30, dogging member 42 and lever member 48 in the position shown in FIGURE 2.

A push plunger 66 extends from solenoid 36 into strike block 12 when solenoid 36 is electrically energized. When solenoid 36 is energized, push plunger 66 engages pin 50 interconnecting dogging member 42 and lever member 48 to allow keeper mechanism 30 to move to a slightly less than perpendicular position within strike block 12. Latch bolt 22 is then free to move up ramped surface 26 and into a fully released condition as illustrated in FIGURE 3. Roller 46 mounted to pin 44 provides for a smoother operation of keeper mechanism 30 as latch bolt 22 retracts keeper mechanism 30 into strike block 12 out of the path of ramped surface 26 to allow latch bolt 22 to completely retract within door 24.

Once latch bolt 22 has cleared keeper mechanism 30, keeper mechanism 30 will automatically return to the closed and locked position due to springs 40, 60 and 62 to the position illustrated in FIGURE 2. When door 24 is again closed, strike plate 14 forces latch bolt 22 back into door 24. Latch bolt 22 stays within door 24 until latch bolt 22 has cleared keeper mechanism 30 at which time latch bolt 22 due to the spring loading forces on latch bolt 22 reenters strike block 12 below dogging member 42 as illustrated in FIGURE 2.



A fail-safe operation of the present door release mechanism 10 can be accomplished by changing the operation of solenoid 36 from a push solenoid to a spring loaded pull solenoid. In the unpowered condition, push plunger 66 is spring loaded to pin 50. When power is applied, push plunger 66 moves out of the way and dogging member 42 and lever member 48 are locked.

It therefore can be seen that the present invention provides for a door release mechanism that is substantially concealed and not visible when the door is closed. The present release mechanism is automatically actuated through operation of a solenoid thereby rendering the present release mechanism invulnerable to attack.

Whereas the present invention has been described with respect to specific embodiments thereof, it will be understood that various changes and modifications will be suggested to one skilled in the art and it is intended to encompass such changes and modifications as fall within the scope of the appended claims.

## CLAIMS:

1. A door release mechanism for a door having a latch bolt comprising:

a strike block adapted to receive the latch bolt;

-5 urging means within said strike block for urging the latch bolt into the door to thereby open the door;

10 inhibit means within said strike block for preventing said urging means from urging the latch bolt into the door to thereby maintain the door closed; and

means for selectively controlling said inhibit means.

2. The door release mechanism of Claim 1 wherein said urging means includes a ramped surface within said strike block.

3. The door release mechanism of Claim 2 wherein said inhibit means includes a pivoting keeper disposed within said ramped surface.

4. The door release mechanism of Claim 3 wherein said means for selectively controlling said inhibit means includes:

5 a dogging mechanism connected to said pivoting keeper; and

an electromagnetic solenoid engagable with said dogging mechanism.

5. A door release mechanism for a door having a latch bolt comprising:

5 a strike block adapted to receive the latch bolt and having a ramped surface over which the latch bolt travels for urging the latch bolt into the door to thereby open the door;

10 a pivoting keeper disposed within said strike block for selectively allowing the latch bolt to travel over said ramped surface to the door open position; and

control means connected to said pivoting keeper for controlling the position of said pivoting keeper with respect to said ramped surface of said strike block.

6. The door release mechanism of Claim 5 wherein said control means includes:

5 lever means connected to said pivoting keeper; and  
means for moving said lever means.

7. The door release mechanism of Claim 6 wherein said means for moving said lever means includes a solenoid.

8. The door release mechanism of Claim 5 wherein said strike block ramped surface includes a slotted aperture for receiving said pivoting keeper.

9. A concealed door release mechanism for a door having a latch bolt comprising:

5 a strike block adapted to receive the latch bolt and having a ramped surface over which the latch bolt travels for urging the latch bolt into the door to thereby open the door;

said ramped surface including a slotted aperture;

10 a pivoting keeper disposed within said slotted aperture for preventing the latch bolt from traveling over said ramped surface to maintain the door in a closed position;

15 means connected to said pivoting keeper for allowing said pivoting keeper to withdraw from said slotted aperture to allow the latch bolt to travel over said ramped surface to thereby open the door.

10. The concealed door release mechanism of Claim 9 and further including:

means for biasing said pivoting keeper within said slotted aperture.

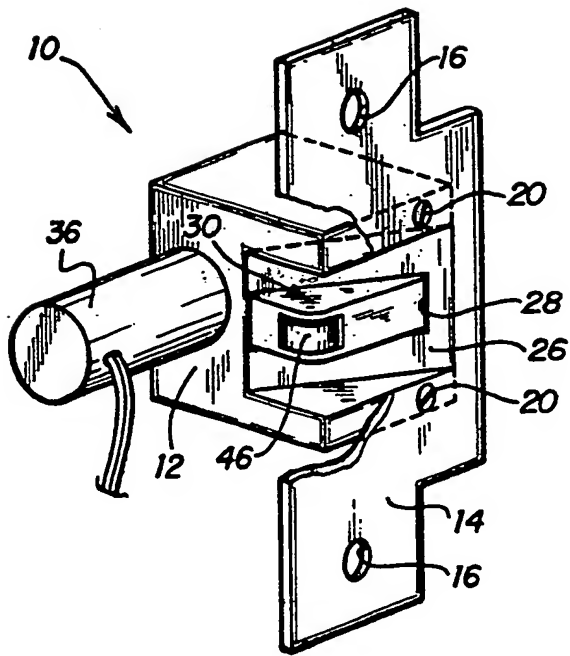


FIG. 1

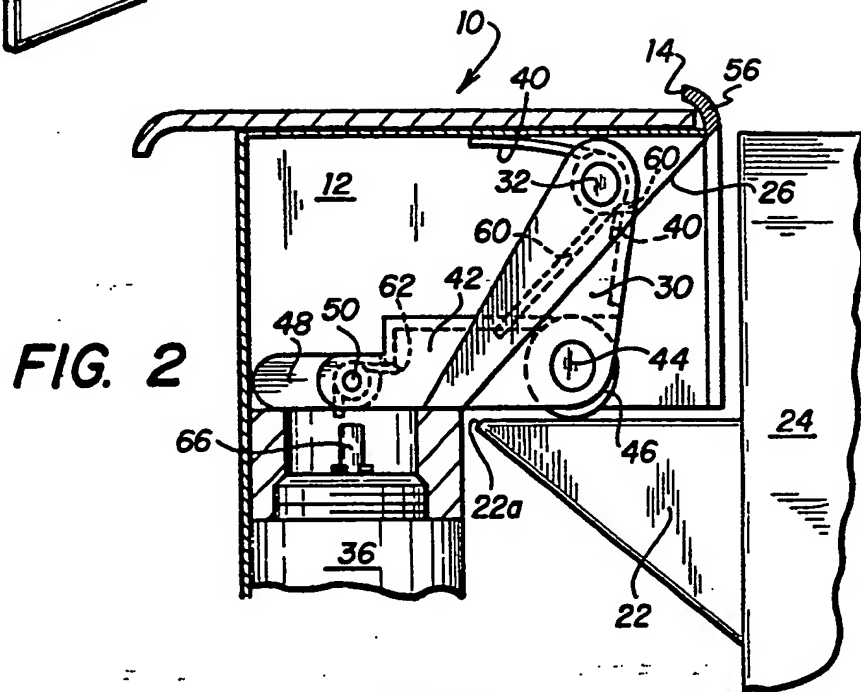


FIG. 2

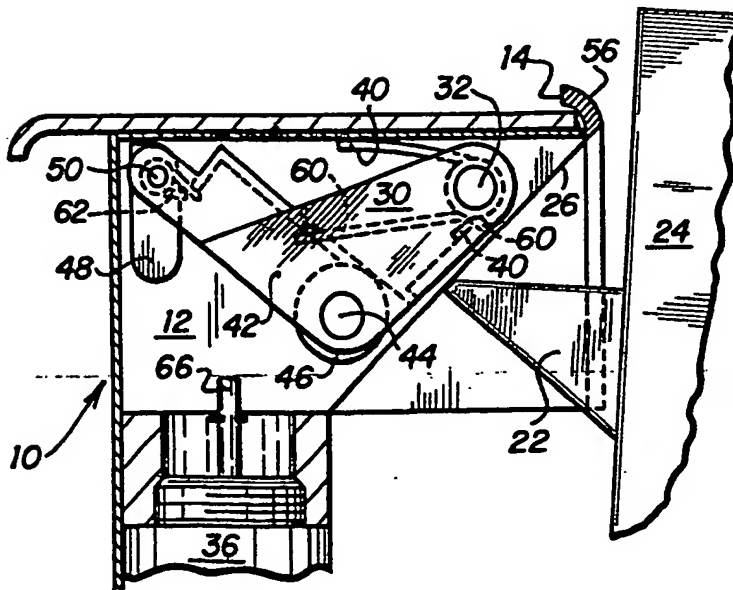


FIG. 3



DOCUMENTS CONSIDERED TO BE RELEVANT			EP 85101284.9
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
A	<u>US - A - 4 181 338</u> (STERLING)		E 05 C 21/02
A	<u>GB - A - 2 111 113</u> (CLARKE INSTRUMENTS)		
			TECHNICAL FIELDS SEARCHED (Int. Cl. 4)
			E 05 C
			E 05 B
The present search report has been drawn up for all claims			
Place of search VIENNA		Date of completion of the search 14-05-1985	Examiner MEISTERLE
<b>CATEGORY OF CITED DOCUMENTS</b>			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	